

The Eugenics Review

NOTES OF THE QUARTER

DECLARATION OF POPULATION

ON HUMAN RIGHTS DAY, 10th December 1966, a declaration signed by the heads of state of twelve countries was issued under the auspices of the United Nations. This statement was developed on the initiative of Mr. J. D. Rockefeller, Chairman of the Population Council, whose hope is that other national leaders will endorse the principles it contains.

The countries whose chiefs subscribed to the Declaration are small, with the exception of India, but well spread, including as they do parts of Europe, Africa, America and Asia. It is their belief that (in précis):

- i. the population problem must be recognized as a principal element in national planning;
- ii. the great majority of parents desire the knowledge and the means to plan their families;
- iii. peace will depend on how the challenge of population growth is met; and
- iv. the objective of family planning is the enrichment of human life, not its restriction.

The signatories conclude by expressing the wish, like Mr. Rockefeller, that others will share these views. Members of the Eugenics Society will heartily concur.

THE STATE OF FOOD AND AGRICULTURE, 1966*

DR. G. C. L. BERTRAM writes:

Frequently in the last two decades the *State of Food and Agriculture* has been commented upon in this journal. Though the Eugenics Society's primary area of interest encompasses the genetic well-being and composition of mankind, the environmental pressures which bear upon our species at all and every stage of existence must receive their due attention too. More especially is this so with the foodstuffs by which alone we are enabled to survive and reproduce, and without which some now do, and soon perhaps many may, starve. When world population bounds upwards there are marked geographical irregularities in the local incidence of demographic change. The ethnic "complexion" of humanity inevitably changes, like in a dream the diverse areas of a patchwork quilt may seem to alter their sizes in relation to one another, so varying the pattern and colour of the whole. So likewise, when food runs short, and if mass famines come, the ultimate genetic effects will be geographically diverse.

The Foreword, an "annual" from the pen of FAO's Director General, may be a fair indicator of reality if a truly excessive optimism of earlier years is remembered when reading the far more gloomy, if not frankly pessimistic, message now published. It will suffice to quote some sentences, but first it needs to be realized that nowhere is there mention of the quite possible occurrence of a poor cereal harvest in parts of S.E. Asia and in North America coincidentally. Secondly it needs stressing that never yet has FAO seemed publicly to recognize that at some stage populations MUST be limited, and that no substantially increased per caput availability of food world wide will come without it.

* FAO/UN. Pp. viii + 242. Price 27s. 6d.

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Any remaining complacency about the food and agriculture situation must surely have been dispelled by the events of the past year. As a result of widespread drought, world food production . . . was no larger in 1965-66 than the year before, when there were about 70 million less people to feed. But for good harvests in North America, world production would almost certainly have declined. In fact, in each of the developing regions except the Near East, food production is estimated to have fallen by 2 per cent in total and by 4 to 5 per cent on a per caput basis. . . .

But the poor harvests of 1965-66 are all the more serious since they come, not in the midst of plenty, but after a long period in which production has only barely kept up with the rapidly mounting population. When many millions of people are already inadequately nourished, there is little if any margin against the effects of a bad season. . . .

Until recently, such a margin has been provided by the large stocks of grain that have been in existence, mainly in North America, since the early 1950s and which have already contributed greatly to the food supplies of the developing countries. Large-scale emergency shipments from these stocks made it possible to avert disaster in India and other drought-stricken areas in 1965-66. However, these shipments, together with the large recent import requirements of China (Mainland) and the U.S.S.R., and the greater success of United States policies in limiting production, have reduced North American grain stocks to their lowest level in well over a decade.

Thus the world food situation is now more precarious than at any time since the period of acute shortage immediately after the second world war. Because of the depletion of the stocks, the world has become much more dependent on current production and hence on weather conditions. It is therefore with some anxiety that we await the outcome of the 1966-67 harvests.

GENE REGULATION

DR. D. J. COVE writes:

The popular reporting of advances in the field of science is to-day a difficult task. In an article in *The Sunday Times* (5th February 1967): "Putting a hand on the power-switch of life", Mr. Bryan Silcock shows admirable caution initially. His article deals with the recent isolation of the probable product of the *i* gene or proposed regulator gene of the lactose system of *Escherichia coli*. He points out that the theory of gene regulation put forward by Jacob and Monod is not yet proven. He perhaps over-estimates the importance of Gilbert and Muller-Hill's recent isolation of the *i* gene product. It is not to belittle this brilliant work to say that it constitutes only another link in the chain of work which must be done in order to establish the molecular basis of gene control. It does not prove that this *i* gene product is a repressor.

It is towards the end of his article that Mr. Silcock regrettably throws caution to the wind. It is certainly not true to say that no one seriously doubts that similar mechanisms are responsible for gene control in *E. Coli*, and during the development of the human embryo. Finally his statement that it is much less far fetched to think of treating some diseases by administering repressors rather than by replacing faulty genes is itself so far fetched as to be worthless.

FERTILITY CONTROL

THE TENTH Oliver Bird Lecture on *Fertility Control: Achievements and Prospects* was given in February 1967 by Dr. G. I. M. Swyer.

The world's population, said Dr. Swyer, was by its rapid growth set on a disaster

course unless effective scientific birth control could soon be introduced on a large scale; there was evidence that, in limited areas, the oestrogen/progestagen oral contraceptives and the intra-uterine plastic devices could arrest excessive population expansion.

Contrary to what was generally supposed, more was known and with more precision about agents affecting male fertility than about those affecting the female. Although numerous substances, mostly steroids, were known which could inhibit spermatogenesis, control by interference with overall hormonal mechanisms had no real prospect of success: it would be necessary to develop chemical agents which would impair the process of spermatogenesis more or less directly. A substantial amount of progress in this direction had already been made.

The most remarkable thing about the Pill was that at the first attempt an almost 100 per cent effective method of oral contraception had been achieved; this was surely without parallel in pharmacological history. Its superior effectiveness over all other methods of birth control was not a matter for dispute, but discussion still centred on the safety of the method, particularly over the long term. A Scientific Study Group of the World Health Organization* had recently reported on this and had concluded that the vast amount of clinical information and laboratory data that had accumulated since their introduction ten or eleven years ago left no doubt that the safety of this class of compounds compared favourably with that of most drugs in widespread use.

Though unsuitable for some women, intra-uterine devices had aroused much interest because they were cheap to produce, and after insertion, could be left in place apparently indefinitely. In large-scale use, the cost of the device was only a small proportion of the total cost of an insertion programme, most of which would be made up by the salaries and equipment of the medical and para-medical personnel. To make an impact, for example, on India's 500 million (and rapidly growing) population, at least 3,000 trained, full-time doctors, with adequate para-medical personnel, would have to work for a year to fit the 30 to 40 million women involved. And during this time there might be 10 to 15 million unwanted pregnancies among those waiting their turn to be fitted.

A number of approaches, as yet impracticable but of scientific interest, included drugs which blocked ovulation by action on the central nervous system; agents which interfered with embryological development; those which interfered with implantation of the fertilized egg; pheromones—agents which, secreted externally by one individual, affect the development, behaviour or reproduction of other individuals; and immunological methods for the control of fertility. In the last instance, the informed view was that the development of an effective and acceptable procedure for inducing infertility in both sexes for fairly closely defined periods of time was a purely technological problem, the solution of which was a matter of appropriately applied resources.

Last year Sir Solly Zuckerman had stated that reproductive physiology needed the kind of breakthrough that had happened in physics time and again during the last thirty years, during which period scarcely anything fundamentally new had been discovered in reproductive physiology. When the breakthrough came, all our prophetic ideas might need drastic revision.

Dr. Swyer looked forward to a realization throughout the world of the need for constructive thinking about family planning, the provision of adequate financial resources to accomplish this as well as pay for the research which would lead to later developments. These would include modifications of existing oral contraceptives, such as one-pill-a-month techniques; injectables; possibly agents to induce ovulation at an accurately predictable time which would permit the really safe use of the "safe period"; anti-implantation agents

* *Clinical Aspects of Oral Gestogens*. Technical Report Series No. 326. See *THE EUGENICS REVIEW*, 1966, 58, 118.

which could be used after coitus rather than in anticipation of it; pills for the male, and immunological techniques used either on the male or on the female.

Finally, the most rational form of fertility control would require the participants to "Exercise their desire to multiply by a *simple act of free will*"—that is by taking the antidote to the anti-fertility agent (whatever it might be) which *everyone* would be having. If population growth continued without sufficient voluntary checks, a system such as this might well provide responsible governments with the means of licensing reproduction by making the antidote available only to such persons as, under their population programmes, would be permitted to reproduce. How desirable this might be, Dr. Swyer concluded, was another matter.

THE OFFSPRING OF INCESTUOUS UNIONS

THE EFFECTS OF inbreeding are of much interest in human genetics. The immediate and obvious risk to offspring is an increase in the incidence of recessive traits, that is traits due to the homozygous state of a mutant gene. Inbreeding is also a form of assortative mating and so will lead to an increase in individuals affected with conditions due to extreme deviations from the population mean for characteristics determined by polygenic inheritance. Further, if canalization of normal development demands an obligate level of heterozygosity, inbreeding may be expected to increase the incidence of maldevelopment due to reduced tolerance to minor environmental insults.

The most obvious source of information on inbreeding comes from first-cousin marriages. Large-scale studies are available from France and Italy, and smaller series from Sweden and the USA.* These studies suggest that infant mortality is about double in offspring of first-cousin marriages, compared with unrelated marriages. Recent Japanese data show rather smaller deleterious effects.† It might be expected that the relative mortality in the offspring of consanguineous marriages would be greater where the overall infant mortality is lower and the "non-genetic" fraction common to both groups of offspring is smaller. Such apparent effects of inbreeding are, however, not necessarily due to the inbreeding itself. Infant mortality is closely correlated with socio-economic status and there may well be a correlation between socio-economic status and the rate of cousin marriage. A small correlation was shown in the Japanese study.

Cousin marriages are becoming relatively rare in Western Europe and the United States, and studies of the offspring of closer inbreeding, the offspring of incestuous unions between first-degree relatives, are of interest not only theoretically but also for the practical purposes of adoption procedures. This form of inbreeding is four times more intense than marriage between cousins. It has recently been suggested in Sweden that the laws against marriage between close relatives should be repealed. Two recent studies provided information, and though both are on a small scale, they give very much the same results.

The first study, from Ann Arbor in the United States, has been reported in abstract.‡ Eighteen pregnancies (twelve brother-sister, six father-daughter) resulting from incestuous unions were ascertained and matched with eighteen control pregnancies. Of the offspring of the incestuous unions, seven only were normal, one was premature and died at six hours, one died at fifteen hours from respiratory distress syndrome, one died at two months of glycogen storage disease, one had bilateral cleft lip, two were severely mentally retarded, and five were mildly mentally retarded with IQs of 50 to 70. Of the eighteen controls only

* Morton, N. E. 1961. In *Progress in Medical Genetics* (Ed. A. Steiberg). Vol. 1. New York: Grune and Stratton.

† Schull, W. J., and Neel, J. V. 1965. *The Effects of Inbreeding in Japanese Children*. New York: Harper and Row.

‡ Adams, M. S., and Neel, J. V. 1966. *Journal of Pediatrics*, 69, 975.

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one died, none had an IQ of less than 80 and only one had a malformation (a branchial cyst). The English study,* reported in a letter to the *Lancet*, included thirteen offspring of incestuous unions (seven brother-sister and six father-daughter) ascertained through Children's Officers during pregnancy or at birth, and followed for from four to six years. Of these thirteen children, five only were normal, one died at thirteen months of cystic fibrosis of the pancreas, one died at twenty-one months from progressive cerebral degeneration with blindness, one at eight years of a congenital heart defect (this child had an IQ of 70), one is severely mentally retarded and four are more mildly mentally retarded with IQs of 50 to 76.

The milder degrees of mental retardation may be attributed in part at least to low parental intelligence. The other anomalies must in large part be attributed to the inbreeding, cystic fibrosis of the pancreas, glycogen storage disease and several types of early onset cerebral degeneration and severe mental retardation are known to be recessive conditions. The inheritance of harelip and the congenital heart malformation (Fallot's tetralogy) is not simple recessive and these two occurrences, if not due to chance, may represent one of the more subtle possible effects of inbreeding.

There would appear to be much to be said for delaying the confirmation of adoption orders of the offspring of incestuous unions until the child has had a full medical examination at the age of about one year.

* Carter, C. O. 1967. *Lancet*, i, 436.